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ABSTRACT

The response of patients with stress problems to one of five music genres during biofeedback training is measured. Fifty male and female patients between the ages of 15 and 25 who were receiving psychotherapy, self-help counseling, and physical fitness training as well as biofeedback training comprised the sample. Using a Biofeedback Systems Electromyographic Feedback System Model PE-100, subjects listened to tapes on biofeedback, the principles of stress reduction, and progressive relaxation. Then they were randomly assigned to listen to one of five musical treatments: rock, jazz, minimalism (emphasis on repetition of a motif or group of motifs), classical, or silence (in which the only sound was that of the biofeedback tone). The music tapes were presented only once. Results indicate no difference in stress reduction among the various types of music. The authors are currently engaged in a second study in which all subjects will receive all five treatments. (KC)

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Effects of Different Genres of Music on Stress Levels

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Running Head: Effects of Music on Stress Levels

Effects of Different Genres of Music on Stress Levels

Over the centuries while humans have enjoyed the strains of music, many theories have been espoused about the ability of music to evoke images, emotions, abilities, and belief systems. Grout (1960) states that the term "music" comes from the Greek word "Muse" which was one of the Greek goddesses with control over the arts and sciences. Pythagoras, Aristotle, and Plato are philosophers of antiquity, identified by Grout, that attributed to music the ability to make changes in our feelings.

The combination of crowding, economic difficulties, extreme competition to get ahead in work, complexities of laws, and the multitude of specialized abilities necessary to function in daily life has made the twentieth century an extremely stressful time in which to live. Through the advent of radio, phonograph records, and portable tapes, we have become exposed to more and more music. Constant musical sounds are the rule for many of us. When we get into the car, we experience music from the radio; upon entering a store, we hear music aimed at putting us into the mood to buy; when we enter an elevator, doctor's office, movie theater or hotel lobby, we are subjected to music, and even when we watch television there is background muscic. There is music everywhere we go. Unfortunately, relatively few social scientists have made an attempt to find out how these two modern ubiquities, music and stress, interact.

A customary belief in the Western world is that loud, rhythmic, and fast music evokes agitation and unrest. The converse has also been accepted, that quiet, arhythmic and slow music leads to peaceful rest.

Fisher and Greenberg (1972) tested that hypothesis and found that in women, "Exciting music produced the most and calm music the least anxiety" (p. 989). Peretti (1975) presented classical music to both men and women, and found that it produced a significant decrease in anxiety. Smith and Morris (1977) stated that stimulative music raised anxiety levels while sedative music lowered anxiety levels. The test used also permitted each subject to pick their most and least favorite styles of music in order to minimize the potentially confounding effect of music styles the subjects disliked, changing their scores. In another, earlier study, Smith and Morris (1976) determined that there was no significant effect in allowing the subject to select their own type of music and that stimulative and sedative factors were far more important than type of music.

In terms of ability to relax, Miller and Bornstein (1977) found that the important aspect of relaxation training was the specific words the subject was hearing over the training tape and that music had little relaxing effect on trainees. Rosenboom (1976) offered the finding that some types of highly rhythmic music, mostly of the minimalism school, provided deep relaxation and a high level of ability to concentrate, especially in musicians. Since minimalism is a fairly new type of music, it might be helpful to further define it. Groves Dictionary (1980) defines minimalism as

> A term introduced in the 1960's to describe a variety of new compositional practices, the common feature being an emphasis on repetition. Minimal music may consist of extended reiteration of a motif or group of motifs...(p. 481).

The antithesis of stress is relaxation. Miller and Bornstein (1977) stated that "music was not found to have an enhancing effect on

relaxation" (p. 291). Peretti (1975) found that music was "an aid to decreasing the tension caused by frustration" (p. 186). Smith and Morris (1976) discriminated further by asserting that, while sedative music helped provide relaxation, stimulative music had just the opposite effect. As can be seen, there is divergence of opinion on the effects of music on relaxation. Part of the problem can probably be attributed to the considerable variance in the operational definitions of music used by the different authors.

Brown and Rosenboom have suggested that music may have a more intense importance in our lives. Brown (1974) discussed the use of "mind-body music" as a consciousness centering technique.

> Mind-body music could provide the means to recognize the special circumstances surrounding these "wrong" feelings. When the individual producing his own mind-body music feels good, or less ill, he produces a mind-body composition that he feels is right...Since most of us are motivated to seek and capture those things which are most helpful to our well-being, we can teach ourselves to eliminate the wrong directions of our minds and bodies because the mind-body compositions provide direction (pp. 403-404).

Brown's belief that we can use mind-body music to make ourselves healthy is not far removed from scientific reality. Rosenboom's (1975) belief was that the very act of concentrating on music blocked out external stimuli. He stated his belief that

> ...alpha production is associated with a blocking of the internal orienting response of an organism to a stimulus. Assuming this to be true, then possibly the production of alpha by a performing musician is related to his ability to concentrate on the internal state, and, through disciplined practice, disengage himself from the need to perform physical orientation in order to produce the right notes or music, i.e. the habituation of the orienting response to the physical environment or to his instrument (pp. 12-13).

Though they are approaching it from different angles, both Brown and Rosenboom agree that the production of music offers people a new way to center their conscious systems in an attempt to provide a more cohesive self-help system. Further, there is the implication that through training people to turn off their exteroceptive system and pay more attention to their proprioceptive and interoceptive systems, they may find new feelings of enhanced health.

Music's effect on performance is another interesting part of the puzzle. Because excessive stress adversely effects performance, it would be important for educators and therapists alike to determine the relationship between music and performance. Most of the available work in the area has been done to determine the effects of music on test performance, but there are a few studies that are relevant to the current topic. Smith and Morris (1977) noted that the general hypothesis "that stimulative music would have a negative effect (on performance) was not generally supported" (p. 1052). Hartley and Williams (1977), on the other hand, found that performance on a vigilence task was better while listening to white noise than to music. Greenberg and Fisher (1971) found that, in terms of psychological testing

> . . . the data support the idea that music can differentially effect responses to psychological tests. Further, at least with the tests used in this study, musical stimuli seemed to have more impact on projective than structured measures. It appears probable that music affects test responses by altering immediate mood rather than by changing enduring personality characteristics (p. 818).

Fisher and Greenberg (1972) amended their statement by stating that

> ...the present findings indicate that music can affect response

> tc both structured and unstructured tests and may...produce a significant impact in one direction on one occasion and the opposite impact on another occasion (p. 990).

Another interesting aspect of the question is the importance of different types of music, and specifically their effects. The research in this area has dealt with the constant problem of operationally defining music into types, but the labels were very broad and did not mention what works were used, although they did specify classical music. In their previous study, Greenberg and Fisher (1971) also referred to calm and exciting music, but only specified classical orchestral music. Hartley and Williams (1977) tried something different when they provided either music or white noise. Peretti (1975) specified his music through naming albums, but again, there was no way to determine what piece was used at what time with which people. Smith and Morris (1976) also did not specify particular pieces of music, although they did break down the types into categories of "Classical, jazz and blues, country/bluegrass, easy listening, and rock/rock & roll" (p. 1188). They described their findings:

> One aspect which contributed to the uniqueness of this study was that five types of both stimulative and sedative music were used. It was assumed that a subject's musical preferences would enhance or inhibit the effect of a musical selection on his emotional state, but it is important to note that such was not the case in this study (p. 1192).

Rosenboom (1976) found that minimalism and classical music stimulate increases in output of alpha waves, while rock stimulates higher output of beta waves. Again, there is a wide divergence of opinion on the effects of different types of music.

Others have discussed music as reinforcement evidenced by

Yarbrough, Charboneau, and Wapnick (1977) with their use of music to reward attention and correct problem solving. Frances and Schiff (1976) used music to induct adolescent members into a psychotherapy group. Obviously, the use of music is widespread, yet it seems that the use is based largely on anecdotal information or suppositions, therefore, additional research is needed.

The present experiment was undertaken to obtain additional information on the affects of music on stress levels. If a significant difference was found to occur, then the estimated efficacy of music as an educational and/or theraputic tool would be enhanced.

This study was conducted using patients that were hospitalized for stress and/or substance abuse problems. The purpose of the study was to determine whether different genres of music were associated with different levels of stress reduction.

Method

Subjects

The subjects were a sample of 50 patients from hospitals for stress and/or substance abuse problems. The sample used were males and females between the ages of 15 and 25. They were typically from middle income Caucasian families, living in urban areas around Houston and Dallas. They were introduced to biofeedback training and receiving regular treatments as part of their treatment plan. At the same time, they were receiving individual, conjoint, and group psychotherapy, self-help counseling, and

physical fitness training.

Apparatus and Materials

All subjects listened to training tapes played through headphones while they were connected to a Biofeedback Systems Electromyographic Feedback System Model PE-100. The machine was connected to the subject's frontalis muscles and the feedback tone mixed into the taped message so the subject was able to "hear" the change in frontalis muscle tension while instructions were being given from the training tape. Readings were taken directly from the meter on the Model PE-100 Biofeedback machine. The music recordings were all low sellers (under 100,000 units) that were not widely known. This helped prevent familiarity effects. For the purposes of this study, classical music, defined as orchestral music meant for the concert hall, was represented by Sir Michael Tippett's Concerto for Double String Orchestra (Argo Records ZRG 680). Jazz music was defined as improvisational music for a small group featuring traditional jazz harmonic structure of flatted thirds and fifths. Jazz was represented by Paul Desmond's Pure Desmond (CTI Records 6059). Minimalism, defined elsewhere in the paper, was represented by Steven Halpern and Georgia Kelley's Ancient Echoes (Herv Records SRI-783-H). Rock music, defined as using electronically amplified instruments, simple chord progressions (I-IV-V), and drums emphasizing the second and fourth beats in common time, was represented by Donnie Iris' Back on The Streets (MCA Records 3272). Silence was designated as the feedback tone being the only sound fed through the headphones.

Procedure

The subjects were given two sessions which consisted of listening to an explanation on tape of biofeedback and a discussion and short demonstration of the principles of stress reduction. The next tape was on progressive relaxation. After three presentations of this tape, the subjects were presented a music tape. Ten subjects were randomly assigned the rock condition, ten were assigned jazz, ten were assigned minimalism, ten were assigned classical and ten were assigned silence. Readings from the PE-100 were taken five times at five minutes intervals for both training and music tapes. The music tapes were presented only once. No more than one session was conducted per day. The subjects were seated in a recliner in a dark, quiet room. The researcher was seated behind and out of sight of the subject.

Results

Each subject was given a series of three training tapes to serve as a baseline and then randomly assigned to one of the 5 different music treatments. To determine whether different music treatments were associated with different levels of stress reduction, the analysis of covariance design, using the baseline scores as the covariant, was selected to control for initial individual differences (Linquist, 1956). A one way analysis of covariance revealed no significant differences among treatment conditions, $F(4.44) = .69$ p .05. Table 1 shows the mean Baseline and mean Music Treatment scores for the tapes in each treatment group.

Table 1

Mean Baseline and Mean Music Treatment Scores

				Music Treatments		
		Baseline		Obtained		Adjusted
Condition	N	M	SD	M	SD	M
Jazz	10	5.20	1.88	3.81	1.83	3.04
Rock	10	4.54	1.31	3.58	1.34	7.88
Classical	10	5.53	2.45	5.26	3.70	1.96
Minimalism	10	5.42	2.13	4.41	2.70	1.96
Silence	10	4.81	.89	3.54	.67	5.76

An examination of the adjusted means revealed no large differences so no further analysis seemed warranted at this point.

Discussion

The lack of significant differences in the early part of the training program could be a result of the time factor itself, or it could be a result of the single treatment exposure and the lack of control for extraneous variables in the study. The novelty of the single treatment with no other criteria to compare it against could explain the lack of differences among subjects in the study. It could also be that there is truly no difference in stress reduction between the various types of music.

Using this as a pilot study, the authors have initiated a second study in which all subjects will receive all five treatments. At the conclusion of

this new approach it should be possible to tell whether the different music treatmerts themselves are having an effect on whether the results of the initial pilot study can be accepted as an answer to the original question.

References

Brown, B. New Mind, New Body. New York: Harper & Row, 1974.

Fisher, S., & Greenberg, R. Selective effects upon women of exciting and calm music. Perceptual and Motor Skills, 1972, 34, 987-990.

Frances, A., & Schiff, M. Popular music as a catalyst in the induction of therapy groups for teenagers. International Journal of Group Psychology, 1976, 26, 393-398.

Greenberg, R., & Fisher, S. Some differential effects of music on projective and structured psychological test. Psychological Reports, 1971, 28, 817-818.

Grout, D.J. A History of Western Music. New York: W. W. Norton & Company, Inc., 1960.

Hartley, L.R., & Williams, T. Steady state noise and music and vigilance. Ergonomics, 1977, 20, 277-285.

Linquist, C.F. Design and Analysis of Experiments in Psychology and Education, Boston: Houghton Mifflin Company, 1956.

Miller, R.K., & Bornstein, P.H. Thirty minute relaxation: A comparison of some methods. Journal of Behavior Therapy & Experimental Psychiatry, 1977, 8, 291-294.

Peretti, P. Changes in galvanic skin response as affected by musical selection, sex, and academic discipline. The Journal of Psychology, 1975, 89, 183-187.

Rosenboom, D. Biofeedback and the Arts: Results of Early Experiments. Vancouver: A.R.C. Publications, 1976.

Smith, C.A., & Morris, L.W. Differential effects of stimulative and sedative music on anxiety, concentration, and performance. Psychological Reports, 1977, 41, 1047-1053.

Smith, C.A., & Morris, L.W. Effects of stimulative and sedative music on cognitive and emotional components of anxiety. Psychological Reports, 1976, 38, 1187-1193.

Yarbrough, C., Carboneau, M., & Wapnick, J. Music as reinforcement for correct math and attending in ability assigned math classes. Journal of Music Therapy, 1977, 14, 77-88.